Kase StatWare® - An Overview

By Cynthia A. Kase, CMT
Kase and Company, Inc., CTA

This article provides an overview of Kase StatWare, a library of mathematically sound, statistically based technical indicators available on eSignal, which are great for trading single markets like FOREX, energy, softs, and the like.

After becoming a self-taught market technician, in January 1990, I left the major oil company I had been with for 10 years and joined a large money-center bank to manage their commodity derivates book. Back then, energy derivatives were in their infancy and so, in the face of the looming Gulf crisis and war that followed, I was faced with trading using only a screen and my wits, having exited the active ebb and flow of information one gets through constant telephone contact with counterparties. In the absence of support from immediate fundamental information and the weaknesses of traditional technical indicators, the areas in which innovation was called for became obvious.

I decided to develop an approach to trading that was suitable for specific markets, such as energy, foreign exchange, metals, grains and the like. Those of us who trade individual markets cannot scan a wide range of issues or instruments looking for the special patterns upon which some technicians base their core success. We need to be in a particular market day in and day out. Also, because many single market traders trade in a corporate or institutional setting such as those trading FOREX for a bank or oil for a refiner, must have high accuracy, low loss results, Kase StatWare has a similar high accuracy, low loss approach to its methodology.

The first area of technical analysis on which I focused was “stops”. Earlier I had used a fixed-value trailing stop. This is a stop of a fixed amount, like $1.00. If holding a long trade the $1.00 is deducted from the highest high made since trade entry, commencing with the bar of entry, and the stop never decreases. If the market were to turn lower, the stop would be hit. The opposite is true for stops in declining markets. In the last five years of the ‘80’s the average daily range on crude was $0.45 with a standard deviation of $0.10. Thus using a stop around $0.45 to $0.55 was almost always reasonable. With the onset of the Gulf Crisis, it was not uncommon to see days over $3.00. Thus I began to think about the need for a stop that adjusted for volatility.

I had come across a couple of trading techniques that used average TrueRange values for stop and reverse systems which used fixed multipliers. For example, a stop might be set at 3*ATR, where

ATR = average(@max((H – L[1]), abs(H – C[1]), abs(L – C[1])), n)

While TrueRange is proportional to volatility and using such an approach is an improvement over a fixed-value stop, the use of the average is insufficient to truly capture market behavior. Let’s say, for example, that we wish to design a doorway that will allow 95% of a given population to enter without ducking or hitting their heads, but no more. Population one has an average height of 5’9” and is made up of the Dallas Cowboys cheerleaders, the shortest of whom is 5’8” tall and the tallest 5’10”. Population two also has an average height of 5’9” and is made up of the Dallas Cowboys team, and their elementary school aged children. The shortest member of population two is 3 feet

© Kase and Company, Inc. 2005. Released 2005 on www.kaseco.com Upload

tall and the tallest 6'10". The door for population one must be smaller than that for population two despite the *average* height being the same.

The same is true for a market. A stop that is going to perform optimally must consider the variability of range, not just the average. So I developed the DevStops, where "Dev" stands for standard deviation.

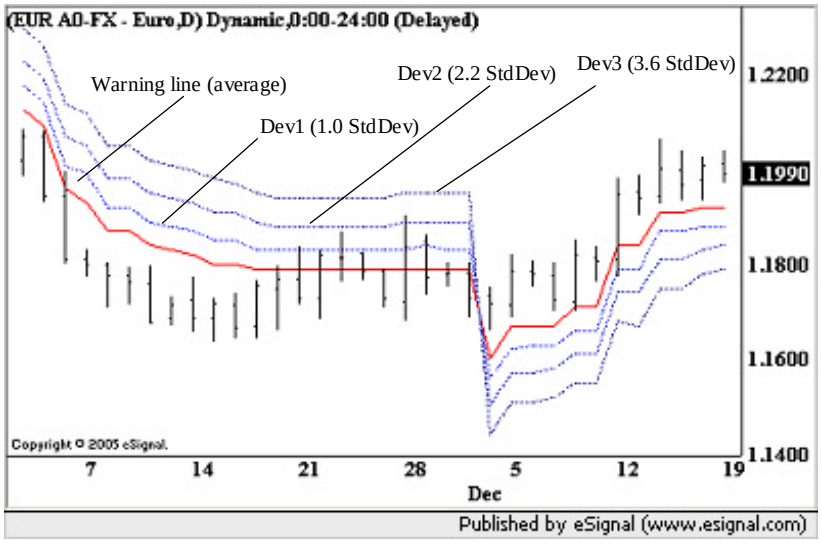
The value of the stop amount is calculated as follows.

DTR (double true range) = @max((H – L[2]), abs(H – C[2]), abs(L – C[2]))
StopAmount = average(DTR, n) + stddev(DTR, n)

Notice the stop uses a double true range, which I found after extensive research to work better than the single. For the actual stops, I use a default of 30 for n, and calculate the average (0), 1, 2.2 and 3.6 standard deviations over the mean. The reason why I add 10% to the two standard deviation level and 20% to the three standard deviation level is to account for skew. Again these adjustments are based on extensive research. The Kase DevStops then automatically adjust for volatility and variability of volatility and also are placed at predictable levels, for example, a stop placed at the one standard deviation level has statistically 84% odds of being hit – or a chance that if hit, the odds are 84% that it was statistically significant. In addition, we know that if the average is hit, what the odds will be for the remaining stops to be hit, and how closes in the direction of or against stops impact market behavior. So these stops can be used to fine-tune both exit and reversal strategies, determine support and resistance levels and predict short-term market behavior.

The stops are placed above or below the data, assuming long or short, based on a simple moving average crossover system built into the indicator. The "front end" could be programmed for any entry system. As shown in the chart below, stops are placed above or below the data automatically. For the entire run to the downside the Eurodollar remained mostly below Dev1 until the turn was imminent at which point it broke Dev1 and hit Dev2. A few bars latter the stops flipped and the market again held stops on the move up.

FOREX, Eurodollar, November/December 2005



When I first started trading I used the Stochastic, RSI and/or MACD to identify market turns and to exit when such a turn was immanent. What I found was that if one of these indicators did generate a divergence the market turned most of the time, *however*, there were a lot of market turns that took place in the absence of divergence – our recent research shows around 55%. The problem is that all the traditional momentum indicators use very simple underlying measures of trend, like moving averages or rates of change of closes. So, I developed the Kase PeakOscillator (KPO) and KaseCD (KCD), which work as well as the traditional indicators in predicting turns, about 80%, but also catch about 80% (versus 55% for traditional) of the turns. So the Kase indicators are "bi-directional" they work in both the direction of predicting turns, and resulting in turns, where the traditional indicators are "uni-directional" working only in the direction of resulting in turns.

Around the same time I learned about serial dependency in time series. A random event can set off series of predictable, or serially dependent, events in turn. For example, in late April (2005) after a protracted relaxation in prices in the energy market there was a reversal back to the upside following forecasts calling for a series of freak snowstorms hit the US Midwest. The storms were random, but even in the early stages of the rally, the upside run became predictable and perpetuated for over a week. So, in thinking about improving momentum indicators, the idea of using serial dependency seemed like the way to go. Thus I came up with the Kase Serial Dependency Index, or KSDI. What the index does, when looking at "up" markets, is divide the natural logarithm (log to base e – an "existential" number) of the high n days ago to the low today, by the volatility, which is also logarithmically based. The opposite calculation is made for the "down" as shown below. Since volatility is a one standard deviation logarithmic rate of change, we can think of it as a standard of measurement for the market. The higher the ratio of the actual market movement to this measure, the more it is exhibiting serial dependency – or "trendiness". Should prices move to about two standard deviations, there is less than a 3% chance that the "trend" will continue and prices will then be expected to revert.

$$\text{Volatility} = \text{stddev}\left(\ln(P/P[1])_n\right)$$

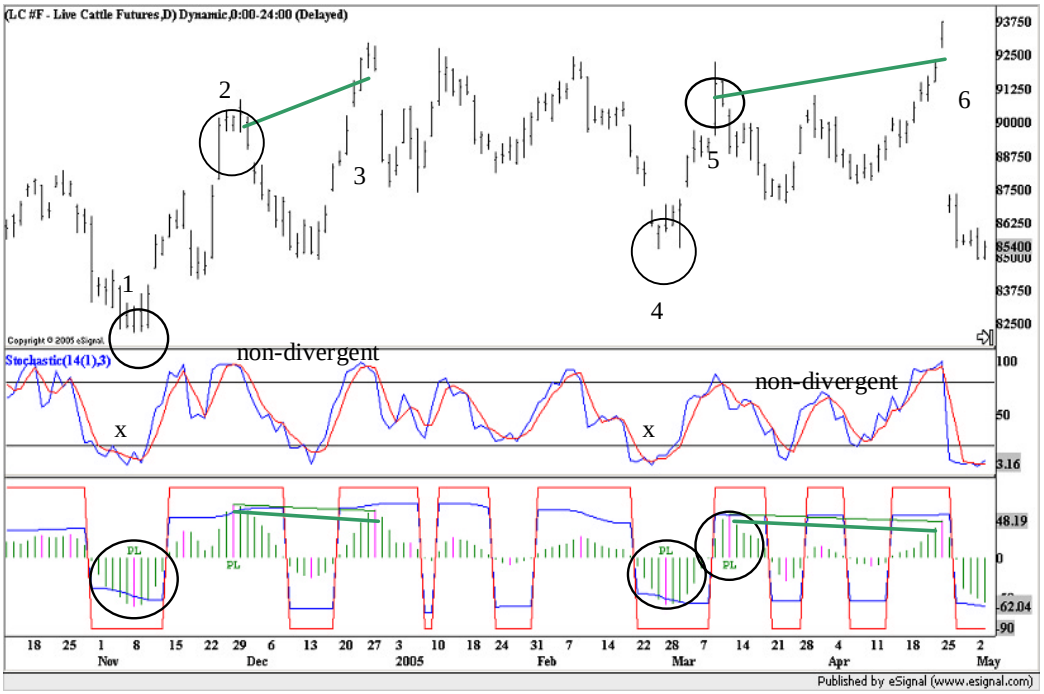
$$\text{KSDI (up)} = (\ln(H/L_n))/\text{volatility}_n$$
$$\text{KSDI (down)} = (\ln(L/H_n))/\text{volatility}_n$$

There are two indicators that are derived from the KSDI, the PeakOscillator and the KaseCD. The Kase PeakOscillator is a sense parallels a simple oscillator which takes the difference between two moving averages. But, in the case of the PeakOscillator, the indicator takes the difference between the up and down indices. The actual index value is based on an "n" where the number of periods in question, over a range of lookback lengths, gives the highest returned value.

The chart below, shows about nine months of daily live cattle data to May 2005. Points "1", "2", "4" and "5" show "Peak Outs". These are discrete pinpoint overbought or oversold signals that, unlike such signals with traditional indicators work very well to catch market turns. Traditional indicator overbought and oversold signals often perpetuate for some time in trending markets making it difficult to choose a point at which to identify the exact turn. The PeakOscillator's lookback length optimization focuses the signal to usually one-bar, making the use of overbought or oversold indications practical and highly accurate. For example it has better than a 75% accuracy in catching turns of about one standard deviation against the prevailing trend. In these cases the Stochastic was technically oversold or oversold but if you had waited for either a K versus D

© Kase and Company, Inc. 2005. Released 2005 on www.kaseco.com Upload

crossover or a break of the 20% threshold line, the signal would have come too late to be as useful. In addition the Stochastic generated numerous false signals, where the KPO did not.



Points "3" and "6" generated classic bearish divergence signals on the KPO, where the Stochastic was non divergent. The default of "14" was used for the Stochastic in this case, and it could be argued that constantly adjusting the periodicity of this indicator could compensate for some of its weaknesses. However, the KPO does not require such manipulation due to its internal self-optimization.

The KaseCD is to the PeakOscillator as the MACD histogram is to a moving average oscillator. Each is an oscillator of an oscillator, with the KCD = PeakOscillator – average (PeakOscillator, n). As illustrated in the chart below, the KaseCD has similar advantages to the PeakOscillator, in that it often catches turns that traditional indicators miss, and develops much more clear rounder and less choppy formations than the MACD. Also unlike the MACD it generates discrete overbought and oversold signals like the PeakOscillator, called KCDpeaks.

The Soybean futures chart below, for the date range March through September 2005, compares the MACD histogram with the KCD histogram. For the first turn "1" the KCD was divergent and the MACD failed, generating only a degrading pattern instead of clear double peaks. Both indicators caught the downside turn "2". At point "3" there was a major correction. The KCD's oversold indication, called a "KCDpeak" indicated by red "KCD" on the histogram takes place when the histogram turns pink which shows a potential oversold condition, in combination with the peak in the histogram itself, marked by the red +. At this point, the KCDpeak caught the turn, as did the small KCDpeak that took place early on the chart, marked by the number "4" that indicated the small correction that followed.

© Kase and Company, Inc. 2005. Released 2005 on www.kaseco.com Upload

Soybean Futures, March to September 2005

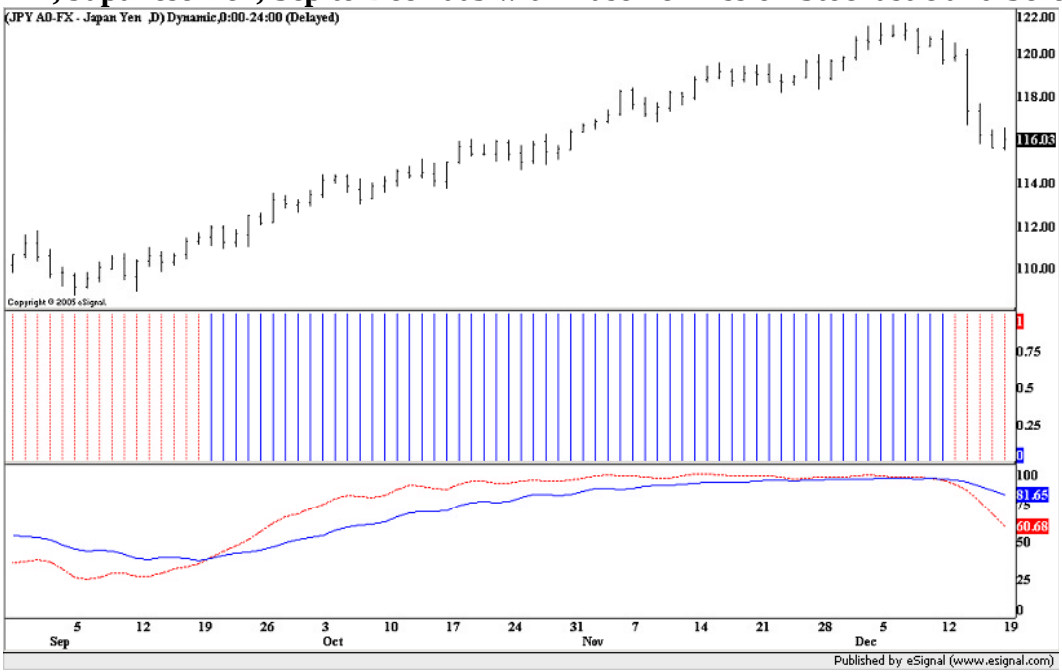
It is often said that entering the market is the easy part. All one has to do is choose an indicator or group of indicators and get in on relatively simple signals. While that is true, one of the keys to successful entries is using multiple time frames to trade – any given chart should contain the actual time frame upon which the trade is focused and a higher time frame as a filter. If the longer term "trend" is up, then long trades will be more successful and vice versa.

When I first heard about the idea of using a longer time frame filter, it appealed to me, but I never had the patience to wait for the filter. For example, if on the open there was a signal generated after the first 15 minute bar, I didn't want to wait another 45 minutes for an hourly bar confirmation. So I developed the Kase Permission Stochastic, and in turn the Kase Permission Screen.

The Permission Stochastic updates every bar and has a variable time frame. The way this works is to use the normal Stochastic math, but instead of filtering, say a 15 minute bar with a 60 minute bar, it filters a 15 minute bar with a n (four in the case of a 60 minute bar) ending with the current 15 minutes. So a 15-minute bar generating a signal at, 0915 would be filtered by an hourly bar from 0815 to 0915 and so forth every 15 minutes. If you prefer using Fibonacci numbers you could change "n" from four to three, and use a 45 minute bar, or five and use a 75 minute bar. Either way, any bar you used to filter would generate a higher time frame bar and thus a signal at the end of the smaller time frame bar. That way any signal gets accelerated as much as possible. For those who like to interpret the fine points of indicators, the accelerated Kase Permission Stochastic may be sufficient as a higher time-frame filter. However, I have added two additional layers of automation. First is to place a rule set against the Permission Stochastic and simply display it as blue (permission to go long) and pink (permission to go short). (Details on the rules may be found in other articles I have published.)

© Kase and Company, Inc. 2005. Released 2005 on www.kaseco.com Upload

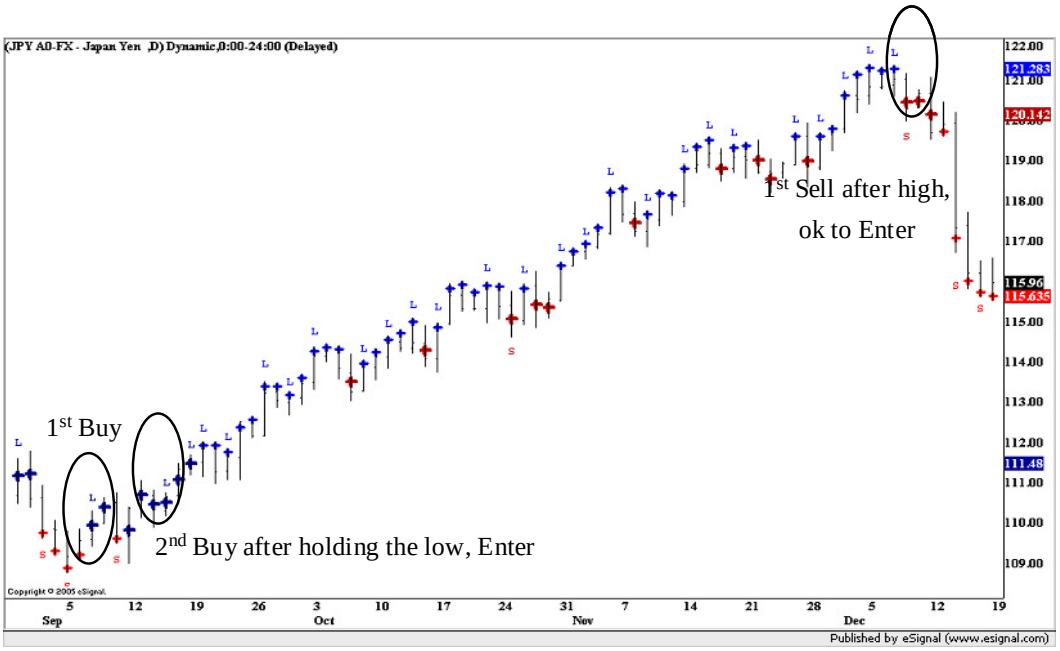
FOREX, Japanese Yen, Sep to Dec 2005 with Kase Permission Stochastic and Screen



A further refinement is to color-code bars, which has resulted in the Kase Easy Entry System (KEES). It works like this. Blue shaded plus signs occur on buy bars, red or pink are sell bars. The underlying signals themselves that generate the blue or red plus signs (+) are simple Stochastic, MACD and RSI crossovers, and for those interested in the "fine points" of what the different colors mean, a complete description is available in the manual. All a trader has to look for are the letters "L" and "S". A valid long bar has an "L" and a valid short bar has an "S". In order to go long or short, we usually recommend waiting for a second, confirming signal, such as the long signal shown to the bottom left of the Yen chart below. The one exception to this rule, which allows for taking first signals is when turns take place with a sharp downturn off a high such as the one circled to the upper right. Notice that for the entire move up, only one of the bars containing red + signs was a valid sell, and that one was just a first sell off of a "non-spike" high and would have been ignored.

© Kase and Company, Inc. 2005. Released 2005 on www.kaseco.com Upload

FOREX, Japanese Yen, September to December 2005, with Kase Easy Entry System



So that's a brief overview and history of Kase StatWare, which uses innovative concepts and techniques that are applicable in today's hi-tech world of computing and trading.

Kase indicators are available on eSignal under Chart Options->Add-on Studies -> StatWare. More information can be found on www.kasestatware.com, where you can also sign up for private over-the-phone lessons.

Cynthia Kase, CMT, a master's level chemical engineer who after 10 years in engineering, in 1983 became a corporate energy trader. She is now president of Kase and Company, Inc., CTA and has an active practice as a forecaster and trading software developer. For more information see www.kaseco.com and www.kasestatware.com.

© Kase and Company, Inc. 2005. Released 2005 on www.kaseco.com Upload